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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,249	03/04/2002	John P. Volpi	28947.5	6523

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EXAMINER	
TRAN, DZUNG D	

ART UNIT	PAPER NUMBER
2638	

DATE MAILED: 12/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/090,249	VOLPI ET AL.	
	Examiner	Art Unit	
	Dzung D Tran	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-20* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08/24/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones, IV et al. US patent no. 6,611,551 in view of Chen et al. US patent no. 6,559,994.

Regarding claim 1, Jones IV discloses a method for transmitting data between a first station and a second station in an optical network (e.g., the system includes the transmission medium which may be ...wireless, etc., see col. 3, lines 49-53), the method comprising:

receiving an input signal representing the data (e.g., QAM data symbols, QAM training symbols, see figure 1) and de-multiplexing the input signal into two or more portions (figure 1, col. 2, lines 54-57);

preparing the input signal to be less susceptible to errors caused by atmospheric (e.g., wireless, etc., see col. 3, lines 49-53) variances during transmission through the atmosphere by performing an inverse fast Fourier transform (figure 1, element 102) on the two or more portions to create an orthogonal representation of the input signal (col.

2, lines 54-64). Jones IV does not specific disclose for modulating the input signal with at least one laser diode so that modulated data can be transmitted on an atmospheric (e.g., wireless) optical carrier between the first station and the second station.

Chen discloses an optical system (figure 1) having a transmitter (E/O) comprise an optical modulator 2 of figure 2A (col. 4, line 64) for modulating with orthogonal signal from sub-carrier multiplexed signals (abstract) to convert it to optical signal and transmits optical signal via optical signal. Therefore, if it is not inherent, it would be obvious to an artisan at the time of the invention was made to include the laser transmitter taught by Chen in the system of Jones IV for modulating the input signal so that the modulated data can be transmitted on an atmospheric optical carrier (e.g., wireless) between the first station and the second station. One of ordinary skill in the art would have been motivated to do this in order to take the advantage of the optical wireless over a RF cable or electrical cable that is it allows the system to transmit the signal over a larger bandwidth and longer distance between the nodes.

Regarding claims 2 and 3, Jones IV further discloses training symbols may be processed in various ways including coding (col. 3, lines 23-26).

Regarding claim 4, Jones IV discloses performing the fast Fourier transform 114 using the encoding information and the input signal (col. 3, lines 61-62).

Regarding claims 9 and 10, Chen discloses in figure 4, the system can be modulated with more than one optical transmitter (81, 82, 83, 84, col. 6, lines 2-8) on different frequency ($\lambda 1$, $\lambda 2$, $\lambda 3$, $\lambda 4$). It would be obvious to an artisan at the time of the

invention was made to include the multiple laser transmitters taught by Chen in the system of Jones IV for modulating the plurality input signals so that the modulated data can be transmitted on an optical carrier between the first station and the second station. One of ordinary skill in the art would have been motivated to do this in order to transmit the plurality carrier signals over a larger bandwidth and longer distance between the nodes.

Regarding claims 11 and 12, Chen discloses in figure 4, the system can be modulated with more than one optical transmitter (81, 82, 83, 84, col. 6, lines 2-8) on different frequency ($\lambda 1$, $\lambda 2$, $\lambda 3$, $\lambda 4$). Likewise, the system is distributing the modulated data across two or more optical carriers, wherein each optical carrier receives a predetermined portion of the modulated data and wherein an amount of modulated data to be carried by each carrier is dynamically allocated.

3. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones, IV et al. US patent no. 6,611,551 in view of Chen et al. US patent no. 6,559,994 and further in view of Chow US patent no. 6,249,543.

Regarding claim 5, as per claim 1 above, the combination system of Jones IV and Chen discloses all the limitations except for generating forward error correction codes. Chow, from the same field of endeavor, discloses an optical system (col. 7, lines 55-58), comprising FEC unit 308 (figure 3, col. 8, line 54) for generating forward error correction codes. At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the FEC unit of Chow in the

combination system of Jones IV and Chen. One of ordinary skill in the art would have been motivate to do this in order to compensates for errors that are due to crosstalk noise, impulse noise, channel distortion, etc...(col. 1, lines 48-50 of Chow).

Regarding claim 6, Jones IV further discloses the input signal representing the data (e.g., QAM data symbols, QAM training symbols, see figure 1), de-multiplexing the input signal into two or more portions (col. 2, lines 54-57).

Regarding claim 7, Jones IV further discloses orthogonal frequency division multiplexing (OFDM) that divided the available bandwidth into a plurality of sub-channel that are orthogonal (col. 2, lines 54-67).

Regarding claim 8, Jones IV further discloses inverse fast Fourier transform (figure 1, element 102) on the two or more portions to create an orthogonal representation of the input signal (col. 2, lines 54-64).

4. Claims 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones, IV et al. US patent no. 6,611,551 in view of Chow US patent no. 6,249,543.

Regarding claims 14 and 20, Jones IV discloses method for transmitting data between a first station and a second station in an optical network (e.g., the system includes the transmission medium which may be ... wireless, etc., see col. 3, lines 49-53), the method comprising:

a receive FIR 110 (e.g., filter 110) for receiving an optical input signal containing the data (e.g., QAM data symbols, QAM training symbols, see figure 1) from an atmospheric optical carrier (e.g., wireless, see col. 3, lines 49-53) and filtering the

optical input signal to filter extraneous frequencies to create a filtered signal (col. 3, lines 58-61), performing a fast Fourier transform by FFT 114 to create two or more portions (see figure 1) and de-multiplexing the two or more portions to extract the data (e.g., QAM data symbol, QAM training symbols). Jones IV differs from claim 14 of the present invention in that he does not disclose for detecting errors in the filter signal and correcting errors in the filtered signal to create a corrected signal. Chow discloses FEC 330 of figure 3 or 164 of figure 1B (col. 2, lines 36-38, col. 9, line 14). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the FEC unit of Chow in the combination system of Jones IV and Chen. One of ordinary skill in the art would have been motivate to do this in order to compensates for errors that are due to crosstalk noise, impulse noise, channel distortion, etc...(col. 1, lines 48-50 of Chow).

Regarding claim 16, Jones IV discloses method for transmitting data between a first station and a second station in an optical network (e.g., the system includes the transmission medium which may be ...an optical fiber, etc., see col. 3, lines 49-53), the method comprising:

a receive FIR 110 (e.g., filter 110) for receiving an optical input signal containing the data (e.g., QAM data symbols, QAM training symbols, see figure 1) from an atmospheric optical carrier (e.g., wireless, see col. 3, lines 49-53) and filtering the optical input signal to filter extraneous frequencies to create a filtered signal (col. 3, lines 58-61), performing a fast Fourier transform by FFT 114 to create two or more portions (see figure 1) and de-multiplexing the two or more portions to extract the data (e.g.,

QAM data symbol, QAM training symbols). Jones IV differs from claim 16 of the present invention in that he does not disclose for detecting errors in the filter signal and correcting errors in the filtered signal to create a corrected signal. Chow discloses FEC 330 of figure 3 or 164 of figure 1B (col. 2, lines 36-38, col. 9, line 14). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the FEC unit of Chow in the combination system of Jones IV and Chen. One of ordinary skill in the art would have been motivate to do this in order to compensates for errors that are due to crosstalk noise, impulse noise, channel distortion, etc...(col. 1, lines 48-50 of Chow).

Regarding claim 17, Jones IV further discloses in figure 1 for extracting an estimate of the channel quality 116.

Regarding claim 18, Chen discloses in figure 4, the system can be modulated with more than one optical transmitter (81, 82, 83, 84, col. 6, lines 2-8) on different frequency ($\lambda 1$, $\lambda 2$, $\lambda 3$, $\lambda 4$).

Regarding claim 19, Jones IV discloses a method for transmitting data between a first station and a second station in an optical network (e.g., the system includes the transmission medium which may be ...wireless, etc., see col. 3, lines 49-53), the method comprising:

receiving an input signal representing the data (e.g., QAM data symbols, QAM training symbols, see figure 1) and de-multiplexing the input signal into two or more portions (figure 1, col. 2, lines 54-57);

preparing the input signal to be less susceptible to errors caused by atmospheric (e.g., wireless, etc., see col. 3, lines 49-53) variances during transmission through the atmosphere by performing an inverse fast Fourier transform (figure 1, element 102) on the two or more portions to create an orthogonal representation of the input signal (col. 2, lines 54-64). Jones IV does not specific disclose for modulating the input signal with at least one laser diode so that modulated data can be transmitted on an atmospheric (e.g., wireless) optical carrier between the first station and the second station.

Chen discloses an optical system (figure 1) having a transmitter (E/O) comprise an optical modulator 2 of figure 2A (col. 4, line 64) for modulating with orthogonal signal from sub-carrier multiplexed signals (abstract) to convert it to optical signal and transmits optical signal via optical signal and further discloses in Fig. 4, the system can be modulated with more than one optical transmitter (81, 82, 83, 84, col. 6, lines 2-8) on different frequency ($\lambda 1$, $\lambda 2$, $\lambda 3$, $\lambda 4$). Therefore, if it is not inherent, it would be obvious to an artisan at the time of the invention was made to include the laser transmitter taught by Chen in the system of Jones IV for modulating the input signal so that the modulated data can be transmitted on an atmospheric optical carrier (e.g., wireless) between the first station and the second station. One of ordinary skill in the art would have been motivated to do this in order to take the advantage of the optical wireless over a RF cable or electrical cable that is it allows the system to transmit the signal over a larger bandwidth and longer distance between the nodes.

5. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung D Tran whose telephone number is (571) 272-3025. The examiner can normally be reached on 9:00 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dzung Tran

Dzung Tran
11/08/2005